

ABSTRACT

The resin seepage-proof spiral wound Electrodeionization (EDI) module includes anion and cation ion exchange membranes, concentrate and dilute distributing channels, net sheets inside of the channels, positive and negative electrodes and an EDI housing. The housing includes an insulation shell and covers. The multiple layers of anion and cation ion exchange membranes concentrate and dilute water distributing channels and net sheets are wound around a negative electrode pipe centered in the EDI module. The negative electrode pipe is arranged to collect concentrate water inside of the pipe. A circularity positive electrode is located outside the wound membranes and within the insulation shell, which is generally cylindrical in shape. Inside the cylindrical housing, the dilute water distributing channel is filled by ion exchange resin. The EDI module includes two inserts of multiple holed material layer, one on each end of the module. Each insert is covered and fixed by a filter cover plate having multi-holes to allow water through. The inserts are arranged to allow water to flow through, and to impede resin from flowing through. These advantages keep the EDI module resin seepage-proof and provide beneficially high performance of water distributing and collection by the module.